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Tour through Dubois

Joyce M. Nanos

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OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

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About the cover

Since moving eight years ago to Dubois, Wyoming, Joyce M. Nanos has been a full-time artist whose subject matter concerns the Dubois area and its residents. Her son-in-law, Dr. Daniel Otto, is a veterinarian in McCook, Nebraska.

People associated with the veterinary profession, via their work or family relation to a veterinarian, who wish to have their animal art considered for reproduction on the cover of the *JAVMA* should send a color photograph (no larger than 5″ × 7″) to Dr. Janis Audin, AVMA, 1931 N Meacham Rd, Suite 100, Schaumburg, IL 60173-4360.

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VBPA

AAVMC reports on veterinary medical degree enrollment, 1991-1992

Statistical information provided by the Association of American Veterinary Medical Colleges (AAVMC) indicates that in the 1991-1992 academic year, total enrollment in DVM-degree programs in the United States and Canada increased by 19, compared with a decline of 31 in 1990 and a decline of 104 in 1989. Enrollment in the Canadian colleges decreased by 1, whereas enrollment in the US colleges increased by 20. For the 1991-1992 academic year, 9,602 students were enrolled (*see* Table 1), including 8,440 in the United States and 1,162 in the Canadian colleges.

Continued on 1068

TABLE 1—Enrollment in US and Canadian veterinary medical degree programs

	Male		Female		Total
	No.	%	No.	%	No.
United States	3,202	38	5,238	62	8,440
Canada	395	34	767	66	1,162
Total	3,597	38	6,005	63	9,602

TABLE 2—Enrollment in US and Canadian graduate-degree and certificate programs

Graduate	MS	PhD	Certificate of internship	Certificate of residency	Certificate of residency and MS	Certificate of residency and PhD	Total
DVM	403	736	144	295	268	61	1,905
Non-DVM	491	652	0	0	0	0	1,143
Total	894	1,388	144	295	268	61	3,048

TABLE 3—Enrollment of veterinary medical degree students in the United States and Canada by class year

College	1st year	2nd year	3rd year	4th year	Total
Auburn University	90	86	85	79	340
California, University of	123	122	122	116	483
Colorado State University	127	130	118	127	502
Cornell University	81	81	78	78	318
Florida, University of	80	80	80	80	320
Georgia, University of	80	71	73	68	292
Illinois, University of	87	80	74	80	321
Iowa State University	101	74	74	66	315
Kansas State University	88	82	98	91	359
Louisiana State University	74	64	56	57	251
Michigan State University	101	115	76	100	392
Minnesota, University of	75	73	56	61	265
Mississippi State University	42	44	48	42	176
Missouri, University of	64	63	63	62	252
North Carolina State University	72	71	72	62	277
The Ohio State University	128	123	120	126	497
Oklahoma Stste University	67	70	62	53	252
Oregon State University	35	0	0	32	67
Pennsylvania, University of	111	101	105	98	415
Purdue University	70	65	67	58	260
Tennessee, University of	57	57	54	51	219
Texas A&M University	118	110	121	115	464
Tufts University	75	66	72	68	281
Tuskegee University	57	55	43	53	208
Virginia Polytechnic Institute	79	77	76	74	306
Washington State University	59	94	91	59	303
Wisconsin, University of	84	89	78	74	305
Total, US colleges	2,225	2,123	2,062	2,030	8,440
Guelph, University of	100	102	102	101	405
Montreal, University of	74	72	72	70	287
Saskatchewan, University of	70	70	70	70	280
Prince Edward Island, University of	52	49	45	44	190
Total, Canadian colleges	296	293	289	285	1,162
Total, US and Canadian colleges	2,521	2,416	2,351	2,315	9,602

TABLE 4—Geographic distribution of entering class of veterinary students in US colleges

Residence	Universities																												
	Auburn	California	Colorado	Cornell	Florida	Georgia	Illinois	Iowa	Kansas	Louisiana	Michigan	Minnesota	Mississippi	Missouri	North Carolina	Ohio	Oklahoma	Oregon	Pennsylvania	Purdue	Tennessee	Texas A&M	Tufts	Tuskegee	Virginia Tech	Washington	Wisconsin	Total
Alabama	46	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	9	...	...	...	56
Alaska	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	4
Arizona	...	1	14	...	1	...	...	...	...	...	...	...	...	...	...	...	2	1	1	1	...	...	...	...	...	1	1	23
Arkansas	...	...	...	...	...	...	...	...	...	19	...	...	...	4	...	...	3	...	...	...	...	...	...	1	...	...	...	27
California	...	119	2	2	1	...	...	6	1	...	2	3	2	1	...	...	4	...	2	3	...	...	...	4	...	3	2	157
Colorado	...	...	60	...	...	...	...	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	63
Connecticut	1	...	...	2	...	2	...	...	...	...	...	1	...	...	2	...	2	...	6	2	...	...	6	1	...	...	...	25
Delaware	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	3
District of Columbia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	3
Florida	1	1	...	1	65	...	...	2	...	...	1	...	1	...	...	...	...	...	2	1	1	...	...	2	...	...	1	70
Georgia	...	...	...	...	...	55	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	...	...	...	58
Hawaii	1	...	3	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	6
Idaho	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	...	12
Illinois	1	...	...	...	...	...	82	4	...	...	1	2	...	1	...	...	...	...	1	2	2	...	...	1	...	...	2	80
Indiana	...	...	...	...	...	...	1	...	...	...	1	...	...	1	...	...	...	...	...	36	...	...	...	...	...	...	...	39
Iowa	...	...	...	...	...	...	...	58	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	58
Kansas	...	...	...	...	...	...	...	...	43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	43
Kentucky	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	36
Louisiana	...	...	...	...	...	...	...	...	...	50	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	51
Maine	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	6
Maryland	...	...	...	2	2	2	...	2	...	...	1	1	...	...	2	1	2	...	2	...	1	...	...	6	30	...	...	54
Massachusetts	...	...	...	...	2	...	1	...	...	...	1	3	...	...	...	...	...	...	4	1	1	...	53	...	...	...	...	66
Michigan	...	...	...	...	1	...	1	2	1	...	83	1	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	92
Minnesota	...	...	...	...	...	...	...	1	...	...	...	42	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	44
Mississippi	...	...	...	...	...	...	...	...	...	...	...	...	28	...	...	...	...	...	...	...	...	...	...	1	...	...	...	29
Missouri	...	...	...	...	...	...	...	...	...	...	...	...	...	50	...	1	...	...	...	...	...	...	...	...	...	...	1	52
Montana	...	...	8	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	2	...	12
Nebraska	...	...	...	...	...	...	...	...	33	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	34
Nevada	...	...	2	...	...	...	...	2	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	1	...	8
New Hampshire	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...	3	...	...	...	...	...	...	1	...	...	...	...	7
New Jersey	...	...	...	6	2	1	...	3	...	...	2	2	1	3	...	5	...	...	13	3	2	...	2	8	...	...	...	53
New Mexico	...	1	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	18
New York	...	...	...	81	4	...	1	3	...	2	4	3	2	...	2	1	1	...	13	1	4	...	1	1	...	...	1	106
North Carolina	...	...	...	...	...	1	...	...	...	...	...	...	...	...	62	...	...	...	...	...	...	...	...	5	...	...	...	68
North Dakota	...	...	...	...	...	...	...	7	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
Ohio	...	...	...	...	...	...	...	...	...	1	2	...	...	...	...	106	...	...	...	...	...	...	1	...	...	...	...	110
Oklahoma	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	46	...	...	...	...	...	...	...	...	...	...	47
Oregon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28	...	...	...	...	1	...	...	...	...	29
Pennsylvania	...	...	1	...	1	...	...	1	1	...	1	3	...	...	1	2	1	...	58	8	4	...	2	1	...	...	...	85
Puerto Rico	...	...	1	1	...	...	...	2	1	1	...	...	1	1	...	1	...	...	...	2	1	...	...	8	...	...	...	18
Rhode Island	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	1	1	...	...	2	1	...	...	...	8
South Carolina	...	...	...	...	...	13	...	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	1	...	...	...	17
South Dakota	...	...	...	...	...	...	...	1	3	...	...	2	...	...	...	...	...	...	...	...	37	...	...	...	...	...	...	6
Tennessee	1	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	118	...	2	...	1	...	40
Texas	1	...	...	...	...	...	...	1	...	1	...	1	2	...	...	...	1	...	...	...	...	...	...	...	...	1	...	128
Utah	...	...	8	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	11
Vermont	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	3
Virginia	...	...	...	1	1	1	...	...	...	...	...	...	1	...	1	...	2	...	...	1	1	...	...	2	49	...	1	61
Washington	...	...	...	...	...	...	1	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	36	...	41
West Virginia	1	...	...	...	...	5	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	11
Wisconsin	...	...	...	...	...	...	...	1	...	...	1	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	74	80
Wyoming	...	...	8	...	...	...	...	...	3	...	...	...	...	...	...	...	...	2	...	1	...	...	...	...	...	1	...	14
Bahamas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Canada	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	4
Germany	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Jamaica	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	3
Peru	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
South Africa	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Spain	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2
Sweden	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Switzerland	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	2
Trinidad	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	**90**	**123**	**127**	**81**	**80**	**80**	**87**	**101**	**88**	**74**	**101**	**75**	**42**	**84**	**72**	**128**	**87**	**35**	**111**	**70**	**57**	**118**	**75**	**57**	**79**	**59**	**84**	**2,225**

AAVMC . . . from 1066

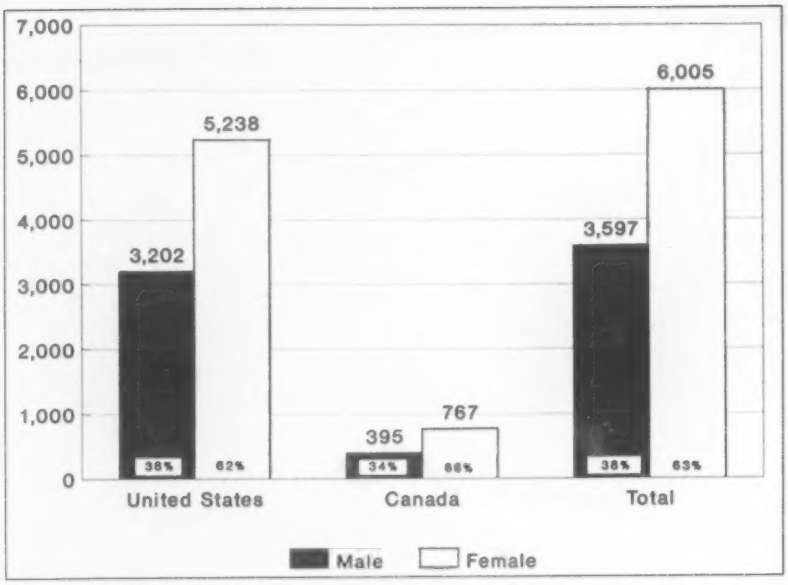
Of the total enrollment in US veterinary medical degree programs, 62% of the students were female (*see* bar graph). This compares with 60% in 1990-1991 and 59% the preceding year.

First-year enrollment in the US colleges increased by 28 students after three years of nearly stable first-year enrollment.

Total enrollment in US and Canadian graduate-degree and certificate programs in 1991-1992 is 3,048 (*see* Table 2), up by 401 participants over 1990-1991. The 1991-1992 total includes 1,905 with and 1,143 without DVM or VMD degrees.

Enrollment by class is presented in Table 3, and geographic distribution of first-year students in the US veterinary colleges is shown in Table 4.

Prepared by the AVMA Center for Information Management.



The graph above exemplifies a growing trend among veterinary students. Today, nearly two thirds of them in North America are women.

Lectures at Tuskegee, Cornell to celebrate corporation's centennial

As part of its 100th anniversary celebration, Merck & Company, Inc, has awarded the Tuskegee University School of Veterinary Medicine and the Cornell University College of Veterinary Medicine each a $10,000 grant to conduct a Merck Centennial Lecture Series at the universities.

The lecture series is one of a number of events that is celebrating Merck & Company's 100th anniversary. The company will be donating $6 million in grants to educational institutions and community organizations around the country during 1992.

Tuskegee and Cornell are two of 25 institutions selected to participate in the centennial lecture segment of the celebration. The lecture complements Tuskegee's and Cornell's academic programs that acquaint students with contemporary veterinary medical issues and introduce them to leading researchers from other institutions.

Animal care program accredited

A new Campus Central Animal Facility was completed and occupied recently at the University of Arizona, Tucson. The facility consolidated and centralized animal care services on the main campus. In addition, the University maintains a facility on the north campus for the Arizona Health Sciences Center as well as four agricultural farms and an environmental research center.

The entire University animal care and use program is administered by a central management unit, University Animal Care, which is directed by Dr. John Mulder. Seven other veterinarians and a staff of 50 support and technical personnel are affiliated with the program. Full accreditation recently was conferred on the program by the American Association for Accreditation of Laboratory Animal Care.

Special Report

1990 Report of the American Association of Poison Control Centers: Poisonings in animals

Carl S. Hornfeldt, MS, and Michael J. Murphy, DVM, PhD

The primary functions of a poison center are to provide poison information, telephone consultation of the management of poison exposures (Appendix), collection of epidemiologic data on poison exposures, and public and professional education. The American Association of Poison Control Centers (AAPCC) was formed to facilitate the functions of poison centers by promoting activities designed to improve the prevention and treatment of poisonings, the exchange of information concerning poison experience, and to develop protocols and policies to guide the activities of poison centers.[1]

Because the means for collecting and reporting national poison center data was inefficient, the AAPCC developed a data collection system that could be tailored to the needs of each poison center and still permit each center to contribute data to a national data base. In 1982, with the support of the FDA, the AAPCC Data Collection Committee developed the necessary computer software for data manipulation and a Cooperative Poison Center Report Form, including a machine-readable data collection form.[2]

Following a successful trial use in 1983, this system was made available to all poison centers in 1984. Since that time, the Annual Report of the American Association of Poison Control Centers National Data Collection System has been published each year in the September issue of the *American Journal of Emergency Medicine*, providing the largest and most detailed summary of human poison exposures available. The AAPCC National Data Collection System has grown from 16 centers reporting 251,012 human poison exposures in 1983 to 72 centers reporting 1,713,462 exposures in 1990.

Although the emphasis of the aforementioned data collection system has been placed on documenting poison experience in humans beings, information on poison exposures in animals has been collected as well. In 1983, 4,643 animal poisonings were reported to the AAPCC.[2] Currently, this number has grown to 41,854. Unfortunately, several shortcomings with the current data collection system exist with regard to animal exposures. For example, no mechanism for collecting species-specific information exists at this time. On the basis of a sample of 3,801 animal cases (9% of the total), we assumed that approximately 99% of the

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cases in this report represent poisonings in companion animals, with about 75% in dogs, 20% in cats, and 4% in other pets.[3] The contribution of information on animal poisonings to the National Data Collection System is voluntary at this time, with animal data provided by only 47 of 72 participating centers. Finally, because animal cases are not subjected to accuracy audits, submitted data are not complete in all cases, especially with regard to outcome. For example, a known outcome was determined in 57.2% of all human exposures. By comparison, of 37,625 recorded outcomes in animals, only 35.7% are known; 34.8% are documented as unknown, but were determined to be of a nontoxic nature in 18.5% of cases and potentially toxic in 18.5% of cases. Therefore, the following information contains a number of other or unknown categories. In these instances, percentages given refer to the remaining data. It is hoped that the following information will be of value to veterinarians, veterinary toxicologists, poison center staff and others in their respective practices, and ultimately animal owners.

Review of the data

A total of 41,854 animal exposure cases were reported to the National Data Collection System in 1990. These data reveal that 90.9% of poisonings in animals were accidental in nature; 0.3% were adverse reactions to drugs, food, or other products; and 8.8% of poisonings were attributable to other or unknown causes. Acute poisonings represented 90.2% of all cases, 1% were chronic, and 8.8% were of unknown duration. Route of exposure was recorded for 88.7% of cases; the most common route of exposure was ingestion (76.7%), followed by dermal exposures (2.9%). Inhalation, bites and envenomations, ocular, and parenteral routes each represent <1% of all poison exposures. Although parenteral exposures accounted for only 30 cases, these resulted in 5 deaths. Multiple routes of exposure accounted for 3% of all cases and 8.8% of fatalities; a potentially toxic substance was identified and recorded for 41,662 cases (99.5%); of these, exposure to one substance or product accounted for 97% of all cases and exposures to two or more substances or products accounted for 3% of cases.

There was essentially no difference in call distribution by day of the week during 1990. On an hourly basis, the number of calls steadily increased throughout the day until the hour between 7:00 and 8:00 PM, when the number of calls peaked.

The site of exposure was recorded for 88.7% of cases. These data reveal that although most animal poisonings occurred in or around the home (87.7%), only 67.2% of calls to the poison center originated from the home and 23.2% originated from a health care facility, presumably a veterinary clinic or hospital. More than half (56.7%) of animal poison exposures were treated in a non-health care facility. In 15% of cases, the animal was already in, and in 11.6% referred to, a veterinary clinic or hospital for treatment. Of those animals seen in a health care facility, 31.1% were treated and released, and 15.2% were admitted for care. In 13.3% of cases referred to a veterinarian, the owner refused to have their animal seen. Unfortunately, 44.2% of cases of animals in, or referred to, a veterinary clinic were lost to follow-up evaluation. For example, a veterinarian may have called about an animal en route to their facility, but follow-up evaluation revealed that the animal never arrived. Occasionally, an animal had already been sent home and follow-up evaluation was not possible

Table 1—Initial sign assessment/outcome for animals exposed to a toxin

Initial assessment	Number of animals (%)
Without signs of toxicosis	24,744 (59.1)
With signs of toxicosis	6,999 (16.7)
With signs of toxicosis, unknown whether related	3,808 (9.1)
With signs of toxicosis, unrelated	1,432 (3.4)
Other/unknown	4,871 (11.6)
Total	41,854 (100.0)
Outcome	
No effect	7,318 (17.5)
Minor effect	4,149 (9.9)
Moderate effect	865 (2.1)
Major effect	140 (0.3)
Death	419 (1.0)
Unrelated effect	2,052 (4.9)
Unknown, nontoxic	14,550 (34.8)
Unknown, potentially toxic	7,755 (18.5)
Missing/invalid cases	4,606 (11.0)
Total	41,854 (100.0)

Table 2—Therapy provided to animals exposed to a toxin

Therapy	Number of animals (%)
Decontamination	
Dilution	10,101 (24.1)
Emetic	4,219 (10.1)
Ipecac	355 (0.9)
Other	3,864 (9.2)
Irrigate/Wash	2,947 (7.0)
Activated charcoal	1,174 (2.8)
Cathartic	835 (2.0)
Lavage	326 (0.4)
Specific therapy	
Atropine	387 (0.9)
Anticonvulsants	133 (0.3)
Ethanol	49 (0.1)
Oxygen	34 (<0.1)
Antihistamines	30 (<0.1)
N-acetylcysteine	30 (<0.1)
Dimercaperol	25 (<0.1)
Forced diuresis	25 (<0.1)
Pralidoxime	24 (<0.1)
Alkalinization	19 (<0.1)
Glucose	16 (<0.1)
Antivenin	14 (<0.1)
Naloxone HCl	10 (<0.1)
Cardiopulmonary resusitation	6 (<0.1)
EDTA	6 (<0.1)
Methylene blue	6 (<0.1)
Exchange transfusion	4 (<0.1)
Deferoxamine	3 (<0.1)
Physostigmine	3 (<0.1)
Pyridoxine	3 (<0.1)
Charcoal hemoperfusion	2 (<0.1)
Cyanide antidote	1 (<0.1)
Penicillamine	1 (<0.1)
Peritoneal dialysis	1 (<0.1)
Resin hemoperfusion	1 (<0.1)

Table 3—Outcome of exposure to nondrug products

Toxicant category	No Effect	Minimal Effect	Moderate Effect	Major Effect	Death	Unrelated effect	Unknown effect	Total No. of animals (%)
Adhesives	80	32	4	0	1	18	264	397 (1.1)
Alcohols	28	24	2	2	1	7	83	147 (0.4)
Art/crafts	97	30	3	0	2	25	405	562 (1.5)
Automotive	88	37	10	4	33	11	229	412 (1.1)
Batteries	69	36	1	0	1	2	160	269 (0.7)
Bite/stings	58	118	24	1	9	21	234	465 (1.2)
Building products	57	34	2	0	0	27	179	299 (0.8)
Chemicals	192	142	26	6	18	72	574	1,030 (2.7)
Cleaning products	397	348	57	10	13	147	1,245	2,217 (5.9)
Cosmetics	224	133	14	2	2	38	558	971 (2.9)
Deodorizers	26	23	4	0	1	21	91	166 (0.4)
Fertilizers	185	74	7	0	10	80	476	832 (2.2)
Food poisoning	140	87	15	2	7	22	349	622 (1.7)
Foreign bodies	191	66	8	1	1	35	753	1,055 (2.8)
Fumes/gases	13	13	5	0	7	9	29	76 (0.2)
Fungicides	8	8	3	0	1	9	23	52 (0.1)
Heavy metals	18	18	9	1	13	13	105	177 (0.5)
Herbicides	71	107	36	4	12	128	231	589 (1.6)
Hydrocarbons	199	194	23	2	3	54	620	1,095 (2.9)
Insecticides	1,162	684	237	41	94	466	4,684	7,368 (19.6)
Lacrimators	5	37	1	0	0	1	17	61 (0.2)
Matches/fireworks	37	8	1	0	0	4	105	155 (0.4)
Miscellaneous	28	19	2	0	1	9	88	147 (0.4)
Mushrooms	103	50	12	2	2	18	146	333 (0.9)
Paints	111	62	8	8	3	42	354	588 (1.6)
Plants	833	605	72	1	41	463	2,524	4,539 (12.1)
Rodenticides	891	142	61	21	60	83	1,899	3,157 (8.4)
Swimming pool products	17	11	2	0	0	11	72	113 (0.3)
Tobacco	27	11	3	0	0	6	38	85 (0.2)
Unknown substances	35	25	5	0	10	20	124	219 (0.6)
Total								28,198 (75.4)

Table 4—Outcome of exposure of animals to drug products

Toxicant category	No Effect	Minimal Effect	Moderate Effect	Major Effect	Death	Unrelated effect	Unknown effect	Total No. of animals (%)
Prescription drugs	1,081	455	102	15	28	94	2,917	4,692(12.5)
Over-the-counter drugs								
Analgesics	154	84	29	7	5	11	375	665 (1.8)
Antacids, antidiarrheals, laxatives	90	25	9	0	0	14	303	441 (1.2)
Cough and cold	104	78	19	2	1	11	255	470 (1.2)
Electrolytes, minerals	31	31	2	1	1	10	120	196 (0.5)
Eye, ear, nose, throat	58	30	1	0	0	5	141	235 (0.6)
Miscellaneous	5	3	1	0	0	0	16	25 (0.1)
Topicals	183	185	13	1	6	44	703	1,135 (3.0)
Vitamins	85	19	2	0	1	2	170	279 (0.7)
Veterinary drugs	36	25	9	1	6	10	101	188 (0.5)
Drugs of abuse	52	48	15	1	2	3	155	279 (0.7)
Unknown drug	122	72	38	9	31	51	499	822 (2.2)
Total								9,427(25.0)

because the treating veterinarian had left for the day.

In 59.1% of cases, animals did not have signs of toxicosis when the poison center was contacted; in 16.7% of cases, the animal had signs of toxicosis likely to be attributable to the exposure (Table 1). Poison exposure was known to result in no known effect in 19.4% of cases or was believed unlikely to result in a toxic effect in 34.7% (54.1% of all cases). Death was the final outcome reported in 425 animals; unlike human fatalities, however, these could not be verified by necropsy or suitable laboratory analysis. Also, it is unknown whether any reported deaths were attributable to euthanasia. Regrettably, 20.1% of cases were potentially toxic, but the outcome is unknown because the caller refused treatment and/or the case was lost to follow-up evaluation.

Treatment was not required in 24.2% of cases, and simple dilution was recommended in 24.1% of cases, generally because no systemic toxicosis was anticipated yet gastric irritation was possible. In 27.1% of cases, the treatment is unknown, and various therapies were provided in the remaining cases (Table 2). Lavage is assumed to indicate gastric lavage. Unfortunately, some treatments common in veterinary practice, such as vitamin K and apomorphine administration, were not obtained on the AAPCC data collection form.

Animals were exposed to a wide variety of substances and products. Exposures to drug and nondrug substances accounted for approximately

Table 5—Substance involved in fatal poisonings of animals

Substance	Number (%)
Insecticides	91 (21.4)
Organophosphates	13 (7.3)
Carbamates	13 (3.1)
Arsenic	1 (0.2)
Chlorinated hydrocarbons	6 (1.4)
Pyrethrins	6 (1.4)
Naphthalene	2 (0.5)
Borates	1 (0.2)
Unknown flea/tick products	15 (3.5)
Other	16 (3.8)
Rodenticides	60 (14.1)
Anticoagulants	39 (9.2)
Strychnine	6 (1.4)
Zinc phosphide	3 (0.7)
Cholecalciferol	2 (0.5)
Fluoroacetate	1 (0.2)
Vacor	1 (0.2)
Unknown rodenticide	8 (1.9)
Fertilizers	10 (2.4)
Herbicides	12 (2.8)
Plants	41 (9.7)
Gastrointestinal irritants	7 (1.6)
Nontoxic plants	6 (1.4)
Oxalates	5 (1.2)
Cardiac glycosides	4 (0.9)
Cyanogenic glycosides	4 (0.9)
Mushrooms	2 (0.5)
Solanine	2 (0.5)
Dermatitis	2 (0.5)
Stimulants	2 (0.5)
Blue-green algae	2 (0.5)
Unknown plants	5 (1.2)
Medications	82 (19.3)
Human prescription drugs	28 (6.8)
Human over-the-counter drugs	14 (3.3)
Veterinary	6 (1.4)
Drugs of abuse	3 (0.7)
Unknown drug	31 (7.3)
Miscellaneous	129 (30.2)
Ethylene glycol & related	41 (9.6)
Teflon	5 (1.2)
Carbon monoxide	4 (0.9)
Metaldehyde	4 (0.9)
Rattlesnake	3 (0.7)
Chocolate	2 (0.5)
Black widow spider	2 (0.5)
Toads	1 (0.2)
Methanol	1 (0.2)
Other/unknown	66 (15.5)

25 and 75% of these cases, respectively (Tables 3 and 4).

The outcome following exposure varied widely between categories. Just over half of the fatalities (Table 5) are accounted for by four categories: insecticides (21.4%), rodenticides (14.3%), ethylene glycol and related compounds (9.6%), and plants (9.6%). More specifically, the three types of products most commonly responsible for death were: ethylene glycol and related compounds (9.6%), anticoagulant rodenticides (9.2%), and organophosphorus insecticides (7.3%).

Appendix: Glossary of terms

Acute—A single, repeated or continuous exposure to the same toxic substance over a period <8 hours.

Chronic—A single or repeated exposure to the same toxic substance lasting longer than 8 hours.

Exposure—An actual or suspected contact with any substance that when ingested, inhaled, absorbed, applied to, or injected into the body may cause damage to structure or disturbance of function to living tissue.

Major effect—The animal had some signs of toxicosis as a result of the exposure. The signs were life-threatening or resulted in residual disability or disfigurement.

Minor effect—The animal had signs of toxicicosis as a result of the exposure, but they were minimal and required no treatment.

Moderate effect—The animal had signs of toxicicosis as a result of the expsoure, which were pronounced, more prolonged, or more of a systemic nature than minor signs. Usually some form of treatment would have been indicated. Signs of toxicosis were not life-threatening and the animal eventually returned to a preexposure state of well-being without residual disability or disfigurement.

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